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SPECIFICATION

TITLE OF INVENTION

REDIRECTION OF NOTIFICATIONS TO A WIRELESS USER DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates to the field of computer science. More particularly, the present invention relates to a method and apparatus for redirecting notifications to a wireless user device.

BACKGROUND OF THE INVENTION

[0002] Users of personal digital assistants (PDAs) often desire to have their email messages or other notifications forwarded from their corporate email account to their PDA. Figures 1A and 1B illustrate two typical mechanisms for redirecting notifications to a PDA. Both solutions include a "redirector" application that resides behind a corporate firewall and pushes email messages from an email server to a wireless user device. Examples of commercially available redirector applications include Symmetry Pro™, available from Infowave Corporation of Burnaby, British

Columbia and BlackBerry™, available from Research in Motion (RIM) of Waterloo, Ontario.

[0003] Referring to FIG. 1A, a user's desktop computer 125 is in communication with an email server or exchange server 100 via a corporate network such as a virtual private network (VPN) 110. Desktop computer 125 is also in communication with a cradle 130. Email server 100 includes a redirector application 105 that is configured to forward notifications directed to a user's desktop computer 125 to the user's PDA 120 through firewall 115 and via remote email directory 185.

[0004] Unfortunately, this solution typically requires the assistance of a corporation's information technology (IT) manager to install the redirector application in the corporate network. Oftentimes, the IT manager may not be able to justify the configuration effort and the expense required to implement the solution.

[0005] Another solution places a redirector application on a user's desktop computer. This is illustrated in FIG. 1B. As shown in FIG. 1B, a user's desktop computer 170 is in communication with an email server or exchange server 155 via a corporate network such as a virtual private network (VPN) 160. Desktop computer 170 is also in communication with a cradle 175. Desktop computer 170 includes a redirector application 180 that is configured to log into email server 155 and forward

notifications directed to a user's desktop computer 170 to the user's PDA 150 through firewall 165 and via remote email server 190.

[0006] Unfortunately, mobile professionals typically use a laptop or mobile computer as their desktop computer and they typically take their computers with them when traveling, leaving nothing behind the corporate firewall to forward notifications to a PDA.

[0007] Accordingly, a need exists in the prior art for mechanism that allows notifications to be forwarded from a corporate network to a users' wireless user device that does not require reconfiguring an email server or a user's desktop computer. A further need exists for such a solution that allows a wireless user device such as a PDA to transparently connect to a corporate network, without visibility by a VPN. Yet another need exists for such a solution that is relatively simple to configure and maintain.

SUMMARY OF THE INVENTION

[0008] Redirecting a notification to a wireless user device includes registering for notification of incoming messages for an account on a message server, the incoming messages being directed to an account on the message server. The redirecting also includes receiving at least one notification and redirecting the at least one notification through a firewall to a wireless user device associated with the account. The remote message server is in communication with a network protected by the firewall. According to one aspect, a cradle is configured to perform the redirection. According to another aspect, the cradle is associated with a remote desktop computer in communication with the network.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The accompanying drawings, which are incorporated into and constitute a part of this specification, illustrate one or more embodiments of the present invention and, together with the detailed description, serve to explain the principles and implementations of the invention.

[0010] In the drawings:

FIG. 1A is a block diagram that illustrates a typical mechanism for redirecting notifications to a personal digital assistant (PDA) using a redirector application installed on an email server.

FIG. 1B is a block diagram that illustrates a typical mechanism for redirecting notifications to a personal digital assistant (PDA) using a redirector application installed on a desktop computer.

FIG. 2 is a block diagram that illustrates a system for redirecting notifications to a wireless user device using a redirector appliance in accordance with one embodiment of the present invention.

FIG. 3 is a block diagram that illustrates a system for redirecting notifications to a wireless user device using a redirector appliance in accordance with one embodiment of the present invention.

FIG. 4 is an event sequence diagram that illustrates operation of a redirector appliance in accordance with one embodiment of the present invention.

FIG. 5 is a flow diagram that illustrates a method for redirecting a notification to a wireless user device by registering with an exchange server in accordance with one embodiment of the present invention.

FIG. 6 is a flow diagram that illustrates a method for redirecting a notification to a wireless user device by polling an email server in accordance with one embodiment of the present invention.

DETAILED DESCRIPTION

[0011] Embodiments of the present invention are described herein in the context of a method and apparatus redirecting notifications to a wireless user device. Those of ordinary skill in the art will realize that the following detailed description of the present invention is illustrative only and is not intended to be in any way limiting. Other embodiments of the present invention will readily suggest themselves to such skilled persons having the benefit of this disclosure. Reference will now be made in detail to implementations of the present invention as illustrated in the accompanying drawings. The same reference indicators will be used throughout the drawings and the following detailed description to refer to the same or like parts.

[0012] In the interest of clarity, not all of the routine features of the implementations described herein are shown and described. It will, of course, be appreciated that in the development of any such actual implementation, numerous implementation-specific decisions must be made in order to achieve the developer's specific goals, such as compliance with application- and business-related constraints, and that these specific goals will vary from one implementation to another and from one developer to another. Moreover, it will be appreciated that such a development effort might be complex and time-consuming, but would nevertheless be a routine

undertaking of engineering for those of ordinary skill in the art having the benefit of this disclosure.

[0013] In accordance with one embodiment of the present invention, the components, process steps, and/or data structures may be implemented using various types of operating systems (OS), computing platforms, firmware, computer programs, computer languages, and/or general-purpose machines. The method can be run as a programmed process running on processing circuitry. The processing circuitry can take the form of numerous combinations of processors and operating systems, or a stand-alone device. The process can be implemented as instructions executed by such hardware, hardware alone, or any combination thereof. The software may be stored on a program storage device readable by a machine.

[0014] In addition, those of ordinary skill in the art will recognize that devices of a less general purpose nature, such as hardwired devices, field programmable logic devices (FPLDs), including field programmable gate arrays (FPGAs) and complex programmable logic devices (CPLDs), application specific integrated circuits (ASICs), or the like, may also be used without departing from the scope and spirit of the inventive concepts disclosed herein.

[0015] In the context of the present invention, the term "network" includes local area networks, wide area networks, the Internet, cable television systems, telephone

systems, wireless telecommunications systems, fiber optic networks, ATM networks, frame relay networks, satellite communications systems, and the like. Such networks are well known in the art and consequently are not further described here.

[0016] In the context of the present invention, the term “wireless user device” includes any device capable of wireless communication and capable of rendering information to a user. The information may be rendered, by way of example, by visual, auditory or tactile means. Exemplary wireless user devices include, by way of example, a personal digital assistant (PDA), a mobile phone, a personal computer, a pager, or the like.

[0017] MAPI (Messaging Application Programming Interface) is a messaging architecture and a client interface component for applications such as electronic mail, scheduling, calendaring and document management. MAPI is available on many Windows client operating systems, beginning with Windows 95. MAPI is also available on Windows® CE client operating systems dating back to 3.0. Windows® 95 and Windows® CE 3.0 are available from Microsoft Corporation of Redmond, WA.

[0018] The IMAP4 (Internet Message Application Protocol - version 4) protocol is described in Request for Comments (RFC) 2060, December 1996. Exemplary email servers that support IMAP4 include Lotus Notes®, available from IBM Lotus

Software of Cambridge, MA, Microsoft® Exchange, available from Microsoft Corporation of Redmond, Washington and Groupwise®, available from Novell of Provo, UT.

[0019] In the context of the present invention, the term “message monitoring protocol” refers to a communication protocol capable of retrieving a message from an email server. Exemplary message monitoring protocols include, by way of example, MAPI, IMAP4, POP3 (Post Office Protocol – Version 3), ActiveSync® and SyncML. The POP3 protocol is described in “Post Office Protocol –Version 3”, RFC 1939, Network Working Group, May 1996, available at www.ietf.org. ActiveSync® is available from Microsoft Corporation of Redmond, WA. The SyncML protocol is described in “SyncML Synch Protocol, version 1.1”, February 15, 2002, available at www.synchml.org.

[0020] In the context of the present invention, the term “message distribution protocol” refers to a communication protocol capable of delivering a message to a wireless user device. Exemplary message distribution protocols include, by way of example, MAPI, IMAP4, POP3, ActiveSync®, Wireless ActiveSync and SynchML. Wireless ActiveSync® is available from Microsoft Corporation of Redmond, WA. A message distribution protocol may also comprise a protocol that uses another protocol as a transport protocol. By way of example, a message distribution protocol may use

Hypertext Transport Protocol (HTTP), Short Message Service (SMS), or the like, as a transport protocol.

[0021] Figures 2 and 3 illustrate systems for redirecting notifications to a wireless user device using a redirector appliance in accordance with embodiments of the present invention. The redirector appliance includes a redirector that redirects notifications such as an email message or an indication of an email message to a wireless user device associated with an email account, regardless of whether a remote desktop computer is in communication with the redirector. Figure 2 illustrates a redirector appliance that uses a network to communicate with a remote desktop computer, whereas FIG. 3 illustrates a redirector appliance that uses a universal serial bus (USB) to communicate with a remote desktop computer.

[0022] Turning now to FIG. 2, a block diagram that illustrates a system for redirecting notifications to a wireless user device using a redirector appliance in accordance with one embodiment of the present invention is presented. System 200 comprises a redirector appliance 215, a wireless user device 245, an email server 210, a remote email server 250 and optionally a remote desktop computer 225. Redirector appliance 215 comprises a network switch 240, a message application interface 235 and a redirector 230. Redirector appliance 215 may also comprise a means for receiving a wireless user device such as a PDA or the like. Network switch 240 is configured to interface between a network such as a virtual private network (VPN) 220 or the like, message application interface 235 and remote desktop computer 225.

Network switch 240 allows both remote desktop computer 225 and redirector appliance 215 to communicate with network 220, without requiring an additional network jack on the users' office wall.

[0023] Many other devices or subsystems (not shown) may be connected in a similar manner. Also, it is not necessary for all of the devices shown in FIG. 2 to be present to practice the present invention. By way of example, remote desktop computer 225 is not required to practice the present invention. Furthermore, the devices and subsystems may be interconnected in different ways from that shown in FIG. 2.

[0024] According to one embodiment of the present invention, redirector appliance 215 comprises an embedded computer that operates under a message monitoring protocol-enabled operating system. Additionally, message application interface 235 comprises a module that implements the message monitoring protocol and redirector 230 is configured to register for notifications of email messages incoming to an email account on an exchange server 210 and redirect received notifications from email server 210 to wireless user device 245 through firewall 205.

[0025] In operation, redirector 230 registers for notifications to remote desktop computer 225 with exchange server 210. Redirector 210 redirects notifications directed to remote desktop computer 225 to wireless user device 245.

[0026] According to one embodiment of the present invention, a notification to wireless user device 350 comprises the actual email message. The notification contents may be encrypted. Additionally, SMS may be used as a transport protocol to deliver the email message notification to the wireless user device 350. Those of ordinary skill in the art will recognize that other transport protocols may be used as well.

[0027] According to another embodiment of the present invention, a notification to wireless user device 350 comprises an indication to the user that new mail has arrived. The user may then use the wireless user device 350 to log in to an email server 305 using a secure protocol such as SSL (Secure Socket Layer) or the like, and receive the email message.

[0028] According to another embodiment of the present invention, message application interface 235 comprises a module that implements a message distribution protocol and redirector 230 is configured to log in to remote email server 210, periodically poll remote message server 210 for new notifications directed to remote desktop computer 225 and redirect the notifications to wireless user device 245 through firewall 205. In operation, redirector 230 logs in to remote message server 210 and periodically checks for new notifications. Redirector 230 redirects the notifications to wireless user device 245.

[0029] Turning now to FIG. 3, a block diagram that illustrates a system for redirecting notifications to a wireless user device using a redirector appliance in accordance with one embodiment of the present invention is presented. Figure 3 is similar to FIG. 2 except that remote desktop computer 310, if present, communicates with redirector appliance 320 via a universal serial bus (USB) interface. According to one embodiment of the present invention, the remote desktop computer is the master 310 on the USB and the redirector appliance 320 is the slave.

[0030] Many other devices or subsystems (not shown) may be connected in a similar manner. Also, it is not necessary for all of the devices shown in FIG. 3 to be present to practice the present invention. By way of example, remote desktop computer 310 is not required to practice the present invention. Furthermore, the devices and subsystems may be interconnected in different ways from that shown in FIG. 3.

[0031] According to another embodiment of the present invention, the wireless user device (reference numeral 245 of FIG. 2 and reference numeral 350 of FIG. 3) comprises a PDA and the redirector appliance (reference numeral 230 of FIG. 2 and reference numeral 335 of FIG. 3) comprises a smart PDA cradle.

[0032] Turning now to FIG. 4, an event sequence diagram that illustrates operation of a redirector appliance in accordance with one embodiment of the present invention is presented. Figure 4 illustrates registering for notification of messages such as email messages directed to an email account on an email server, redirecting a notification to a wireless user device 430 and redirecting requests from the wireless user device 430. At 435, redirector appliance 415 registers with a remote message server 425. Remote message server 425 communicates the registration request to message server 410. Upon receiving a message from a message originator 405 directed to an email account on the message server, message server 410 sends the message to redirector appliance 415, redirector appliance 415 redirects notification of the message to remote message server 425 and remote message server 425 sends the notification to wireless user device 445. If the notification comprises an indication of a new message, the user of wireless user device 430 may communicate with message server 410, possibly using a secure protocol as SSL, to obtain the message content.

[0033] Still referring to FIG. 4, upon receiving a request to print an email message attachment from wireless user device 430, remote message server 425 sends the request to redirector appliance 415, redirector appliance 415 redirects the request to message server 410, message server 410 sends the attachment to printer 400 and printer 400 prints the attachment.

[0034] The examples presented in FIG. 4 are for purposes of illustration only and are not intended to be limiting in any way. Those of ordinary skill in the art will recognize that many types of messages may be redirected by redirector appliance 415 through a firewall 420 to a wireless user device 430. Those of ordinary skill in the art will also recognize that many types of requests sent by a wireless user device 445 may be received by redirector appliance 440 and redirected.

[0035] Turning now to FIG. 5, a flow diagram that illustrates a method for redirecting a notification to a wireless user device by registering with an exchange server in accordance with one embodiment of the present invention is presented. At 500, a redirector registers with an exchange server for notifications of incoming email messages directed to an email account on the exchange server. At 505, a determination is made regarding whether a notification of incoming email messages has been received. If a notification of incoming email messages has been received, at 510 the notification is redirected to the wireless user device associated with the email account.

[0036] Turning now to FIG. 6, a flow diagram that illustrates a method for redirecting a notification to a wireless user device by polling an email server in accordance with one embodiment of the present invention is presented. At 600, a redirector logs in to an email server. At 605, a determination is made regarding whether it is time to check for email messages directed to an email account associated

with a user. If it is time to check for new email messages, the check is performed at 610. At 615, a determination is made regarding whether there is at least one new email message. If there is at least one new email message, the at least one email message is retrieved at 620 and at 625 the at least one email message is redirected to the wireless user device associated with the email account.

[0037] The above description regarding message monitoring protocols and message distribution protocols is for the purpose of illustration and is not intended to be limiting in any way. Those of ordinary skill in the art will recognize other communication protocols may be used.

[0038] While embodiments and applications of this invention have been shown and described, it would be apparent to those skilled in the art having the benefit of this disclosure that many more modifications than mentioned above are possible without departing from the inventive concepts herein. The invention, therefore, is not to be restricted except in the spirit of the appended claims.

CLAIMS

What is claimed is:

1. A method for redirecting a notification to a wireless user device, the notification received by a redirector appliance providing a redirector service, the method comprising:
registering for notification of incoming messages for an account on a message server,
said incoming messages directed to an account on said message server, said message server in communication with a network protected by a firewall;
receiving at least one notification; and
redirecting said at least one notification through said firewall to a wireless user device associated with said account.
2. The method of claim 1 wherein
said message server comprises an email server; and
said at least one new message comprises at least one new email.
3. The method of claim 2 wherein
said message server comprises an exchange server; and
said method further comprises using a message monitoring protocol to obtain said at least one notification.

4. The method of claim 1 wherein said at least one notification comprises at least one message.
5. The method of claim 4, further comprising encrypting said at least one message before said redirecting.
6. The method of claim 1 wherein said at least one notification comprises at least one indication of at least one message.
7. The method of claim 1 wherein said redirecting further comprises using SMS (Short Message Service) as a transport protocol to deliver said at least one notification to said wireless user device.
8. A method for redirecting a notification to a wireless user device, the notification received by a redirector appliance providing a redirector service, the method comprising:
 - logging in to a message server;
 - periodically checking for at least one new message directed to an account on said message server, said message server in communication with a network protected by a firewall; and
 - redirecting a notification of said at least one new message through said firewall to a wireless user device associated with said account.

9. The method of claim 8 wherein
said message server comprises an email server; and
said at least one new message comprises at least one new email.
10. The method of claim 9 wherein said method further comprises using a message
distribution protocol to obtain said at least one notification.
11. The method of claim 8 wherein said at least one notification comprises at least one
message.
12. The method of claim 11, further comprising encrypting said at least one message
before said redirecting.
13. The method of claim 8 wherein said at least one notification comprises at least one
indication of at least one message.
14. The method of claim 8 wherein said redirecting further comprises using SMS (Short
Message Service) as a transport protocol to deliver said at least one notification to
said wireless user device.

15. A method for redirecting a notification to a wireless user device, the notification received by a redirector appliance providing a redirector service, the method comprising:
- step for registering for notification of incoming messages for an account on a message server, said incoming messages directed to an account on said message server, said message server in communication with a network protected by a firewall;
 - step for receiving at least one notification; and
 - step for redirecting said at least one notification through said firewall to a wireless user device associated with said account.
16. The method of claim 15 wherein
- said message server comprises an email server; and
 - said at least one new message comprises at least one new email.
17. The method of claim 16 wherein
- said message server comprises an exchange server; and
 - said method further comprises step for using a message monitoring protocol to obtain said at least one notification.

18. The method of claim 15 wherein said at least one notification comprises at least one message.
19. The method of claim 18, further comprising step for encrypting said at least one message before said redirecting.
20. The method of claim 15 wherein said at least one notification comprises at least one indication of at least one message.
21. The method of claim 15 wherein said step for redirecting further comprises step for using SMS (Short Message Service) as a transport protocol to deliver said at least one notification to said wireless user device.
22. A method for redirecting a notification to a wireless user device, the notification received by a redirector appliance providing a redirector service, the method comprising:
 - step for logging in to a message server;
 - step for periodically checking for at least one new message directed to an account on said message server, said message server in communication with a network protected by a firewall; and
 - step for redirecting a notification of said at least one new message through said firewall to a wireless user device associated with said account.

23. The method of claim 22 wherein
said message server comprises an email server; and
said at least one new message comprises at least one new email.
24. The method of claim 23 wherein said method further comprises step for using a
message distribution protocol to obtain said at least one notification.
25. The method of claim 22 wherein said at least one notification comprises at least one
message.
26. The method of claim 25, further comprising step for encrypting said at least one
message before said redirecting.
27. The method of claim 22 wherein said at least one notification comprises at least one
indication of at least one message.
28. The method of claim 22 wherein said step for redirecting further comprises step for
using SMS (Short Message Service) as a transport protocol to deliver said at least one
notification to said wireless user device.

29. A program storage device readable by a machine, embodying a program of instructions executable by the machine to perform a method for redirecting a notification to a wireless user device, the notification received by a redirector appliance providing a redirector service, the method comprising:
- registering for notification of incoming messages for an account on a message server,
 - said incoming messages directed to an account on said message server, said message server in communication with a network protected by a firewall;
 - receiving at least one notification; and
 - redirecting said at least one notification through said firewall to a wireless user device associated with said account.
30. The program storage device of claim 29 wherein
- said message server comprises an email server; and
 - said at least one new message comprises at least one new email.
31. The program storage device of claim 30 wherein
- said message server comprises an exchange server; and
 - said method further comprises using a message monitoring protocol to obtain said at least one notification.

32. The program storage device of claim 29 wherein said at least one notification comprises at least one message.
33. The program storage device of claim 32, said method further comprising encrypting said at least one message before said redirecting.
34. The program storage device of claim 29 wherein said at least one notification comprises at least one indication of at least one message.
35. The program storage device of claim 29 wherein said redirecting further comprises using SMS (Short Message Service) as a transport protocol to deliver said at least one notification to said wireless user device.
36. A program storage device readable by a machine, embodying a program of instructions executable by the machine to perform a method for redirecting a notification to a wireless user device, the notification received by a redirector appliance providing a redirector service, the method comprising:
logging in to a message server;
periodically checking for at least one new message directed to an account on said message server, said message server in communication with a network protected by a firewall; and

redirecting a notification of said at least one new message through said firewall to a wireless user device associated with said account.

37. The program storage device of claim 36 wherein said message server comprises an email server; and said at least one new message comprises at least one new email.
38. The program storage device of claim 37 wherein said method further comprises using a message distribution protocol to obtain said at least one notification.
39. The program storage device of claim 36 wherein said at least one notification comprises at least one message.
40. The program storage device of claim 39, said method further comprising encrypting said at least one message before said redirecting.
41. The program storage device of claim 36 wherein said at least one notification comprises at least one indication of at least one message.

42. The program storage device of claim 36 wherein said redirecting further comprises using SMS (Short Message Service) as a transport protocol to deliver said at least one notification to said wireless user device.
43. An apparatus for redirecting a notification to a wireless user device, the notification received by a redirector appliance providing a redirector service, the apparatus comprising:
- means for registering for notification of incoming messages for an account on a message server, said incoming messages directed to an account on said message server, said message server in communication with a network protected by a firewall;
- means for receiving at least one notification; and
- means for redirecting said at least one notification through said firewall to a wireless user device associated with said account.
44. The apparatus of claim 43 wherein
- said message server comprises an email server; and
- said at least one new message comprises at least one new email.
45. The apparatus of claim 44 wherein
- said message server comprises an exchange server; and

said apparatus further comprises means for using a message monitoring protocol to obtain said at least one notification.

46. The apparatus of claim 43 wherein said at least one notification comprises at least one message.
47. The apparatus of claim 46, further comprising means for encrypting said at least one message before said redirecting.
48. The apparatus of claim 43 wherein said at least one notification comprises at least one indication of at least one message.
49. The apparatus of claim 43 wherein said means for redirecting further comprises means for using SMS (Short Message Service) as a transport protocol to deliver said at least one notification to said wireless user device.
50. The apparatus of claim 43, further comprising means for receiving means for receiving said wireless user device.

51. An apparatus for redirecting a notification to a wireless user device, the notification received by a redirector appliance providing a redirector service, the apparatus comprising:
means for logging in to a message server;
means for periodically checking for at least one new message directed to an account on said message server, said message server in communication with a network protected by a firewall; and
means for redirecting a notification of said at least one new message through said firewall to a wireless user device associated with said account.
52. The apparatus of claim 51 wherein
said message server comprises an email server; and
said at least one new message comprises at least one new email.
53. The apparatus of claim 52 wherein said apparatus further comprises means for using a message distribution protocol to obtain said at least one notification.
54. The apparatus of claim 51 wherein said at least one notification comprises at least one message.

55. The apparatus of claim 54, further comprising means for encrypting said at least one message before said redirecting.
56. The apparatus of claim 51 wherein said at least one notification comprises at least one indication of at least one message.
57. The apparatus of claim 51 wherein said redirecting further comprises means for using SMS (Short Message Service) as a transport protocol to deliver said at least one notification to said wireless user device.
58. The apparatus of claim 51, further comprising means for receiving said wireless user device.
59. An apparatus for redirecting a notification to a wireless user device, comprising:
a redirector configured to:
 register for notification of incoming messages for an account on a message server,
 said incoming messages directed to an account on said message server, said
 message server and a remote desktop computer communicatively coupled by
 a network protected by a firewall;
receive at least one notification; and
redirect said at least one notification through said firewall to a wireless user
device associated with said remote desktop computer;

a network switch configured to interface between said apparatus, said remote desktop computer and said network; and
a message application interface configured to interface between said redirector and said network switch.

60. The apparatus of claim 59 wherein
said message server comprises an email server; and
said at least one new message comprises at least one new email.
61. The apparatus of claim 60 wherein
said message server comprises an exchange server; and
said message application interface further comprises a module that implements a message monitoring protocol to obtain said at least one notification.
62. The apparatus of claim 59 wherein said at least one notification comprises at least one message.
63. The apparatus of claim 62 wherein said redirector is further configured to encrypt said at least one message before redirecting said at least one notification.

64. The apparatus of claim 59 wherein said at least one notification comprises at least one indication of at least one message.
65. The apparatus of claim 59 wherein said redirector is further configured use SMS (Short Message Service) as a transport protocol to deliver said at least one notification to said wireless user device.
66. The apparatus of claim 59 wherein said apparatus is further configured to receive said wireless user device.
67. An apparatus for redirecting a notification to a wireless user device, the apparatus comprising:
a redirector configured to:
 log in to a message server;
 periodically check for at least one new message directed to an account on said message server, said message server in communication with a network protected by a firewall; and
 redirect a notification of said at least one new message through said firewall to a wireless user device associated with account;
a network switch configured to interface between said apparatus, a remote desktop computer and said network; and

a message application interface configured to interface between said redirector and
said network switch.

68. The apparatus of claim 67 wherein
said message server comprises an email server; and
said at least one new message comprises at least one new email.
69. The apparatus of claim 68 wherein said message application interface further
comprises a module that implements a message distribution protocol to obtain said at
least one notification.
70. The apparatus of claim 67 wherein said at least one notification comprises at least one
message.
71. The apparatus of claim 70 wherein said redirector is further configured to encrypt
said at least one message before redirecting said at least one notification.
72. The apparatus of claim 67 wherein said at least one notification comprises at least one
indication of at least one message.

73. The apparatus of claim 67 wherein said redirector is further configured to use SMS (Short Message Service) as a transport protocol to deliver said at least one notification to said wireless user device.
74. The apparatus of claim 67 wherein said apparatus is further configured to receive said wireless user device.
75. An apparatus for redirecting a notification to a wireless user device, comprising:
a redirector configured to:
 register for notification of incoming messages for an account on a message server,
 said incoming messages directed to an account on said message server, said
 message server in communication with a network protected by a firewall;
 receive at least one notification; and
 redirect said at least one notification through said firewall to a wireless user
 device associated with said account;
a Universal Serial Bus (USB) hub to interface between a remote desktop computer
and said apparatus;
a network interface configured to interface between said apparatus and said network;
and
a message application interface configured to interface between said redirector and
said network interface.

76. The apparatus of claim 75 wherein said apparatus is further configured to receive said wireless user device.
77. An apparatus for redirecting a notification to a wireless user device, the apparatus comprising:
- a redirector configured to:
 - log in to a message server;
 - periodically check for at least one new message directed to an account on said message server, said message server in communication with a network protected by a firewall; and
 - redirect a notification of said at least one new message through said firewall to a wireless user device associated with said account;
 - a Universal Serial Bus (USB) hub to interface between a remote desktop computer and said apparatus;
 - a network interface configured to interface between said apparatus and said network;
 - and
 - a message application interface configured to interface between said redirector and said network interface.
78. The apparatus of claim 77 wherein said apparatus is further configured to receive said wireless user device.

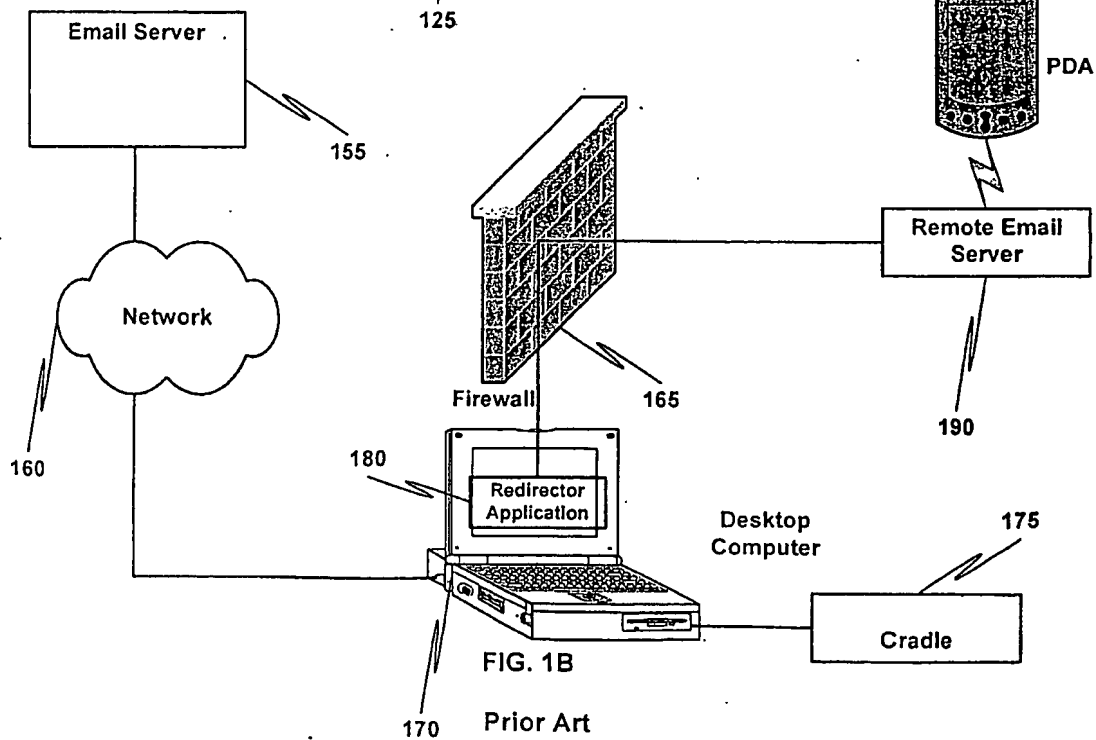
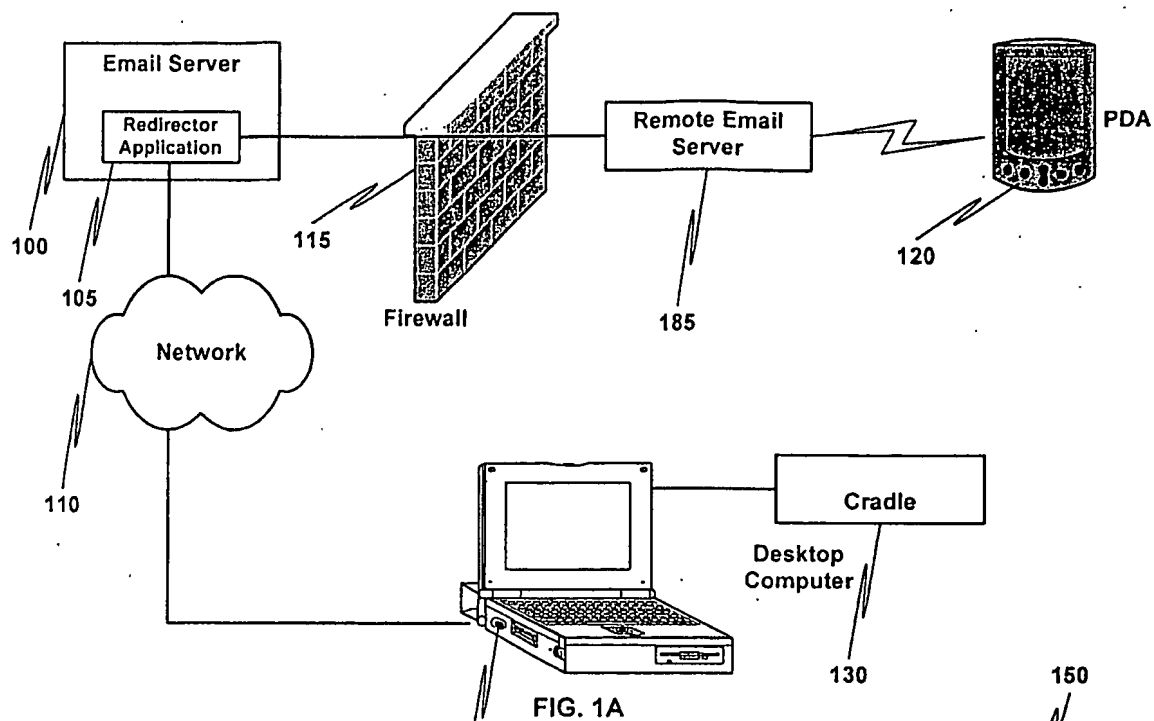


FIG. 1

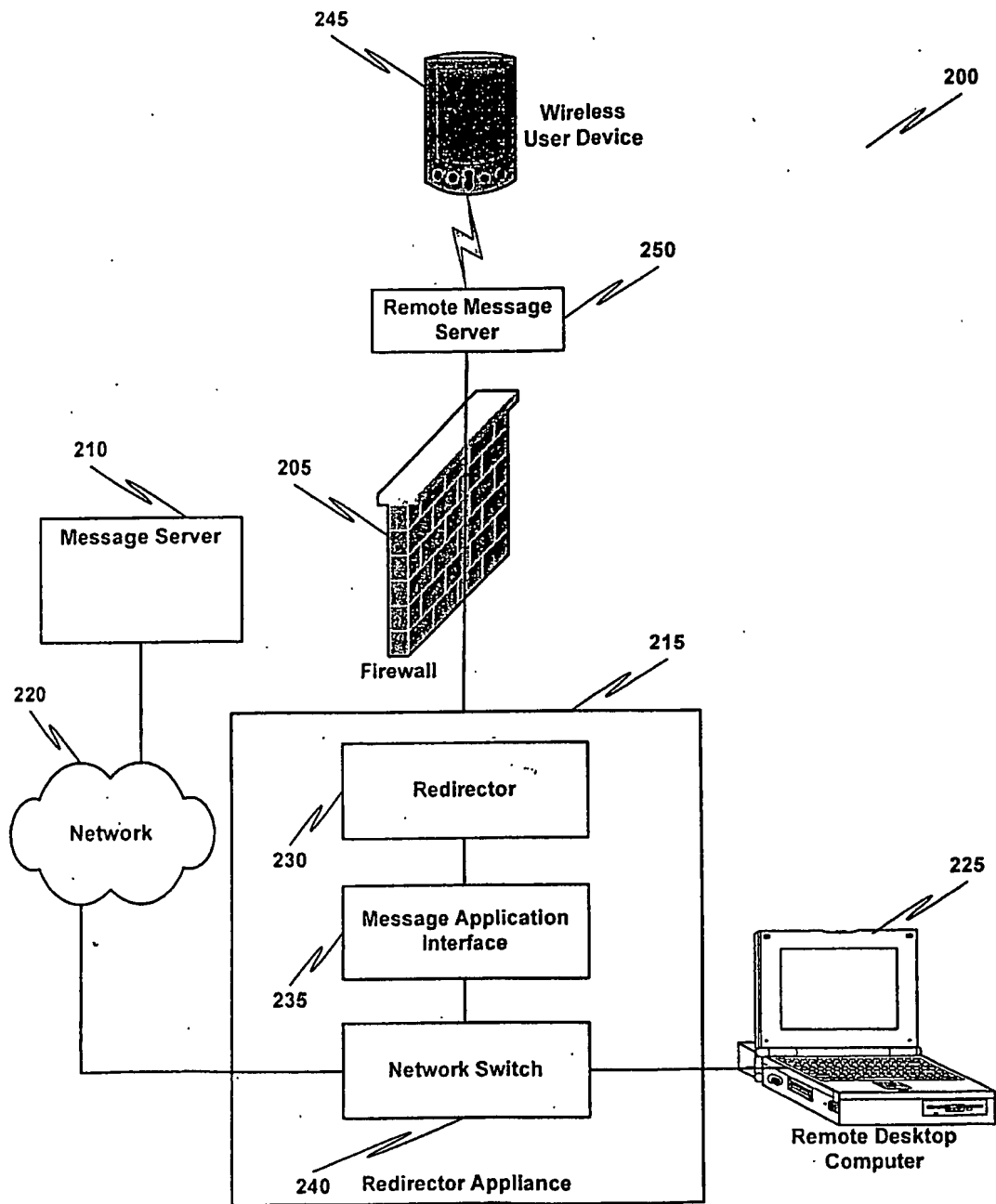


FIG. 2

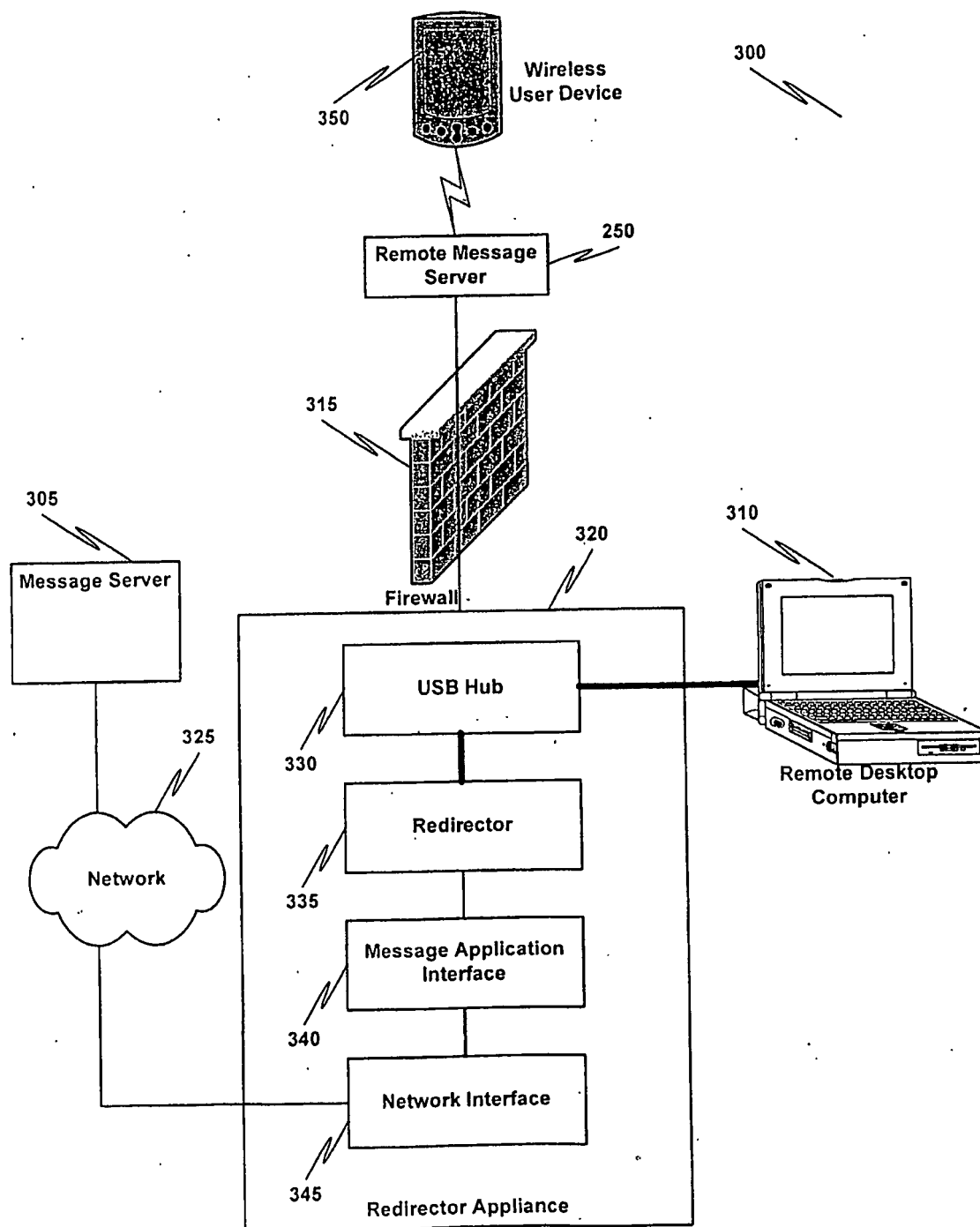


FIG. 3

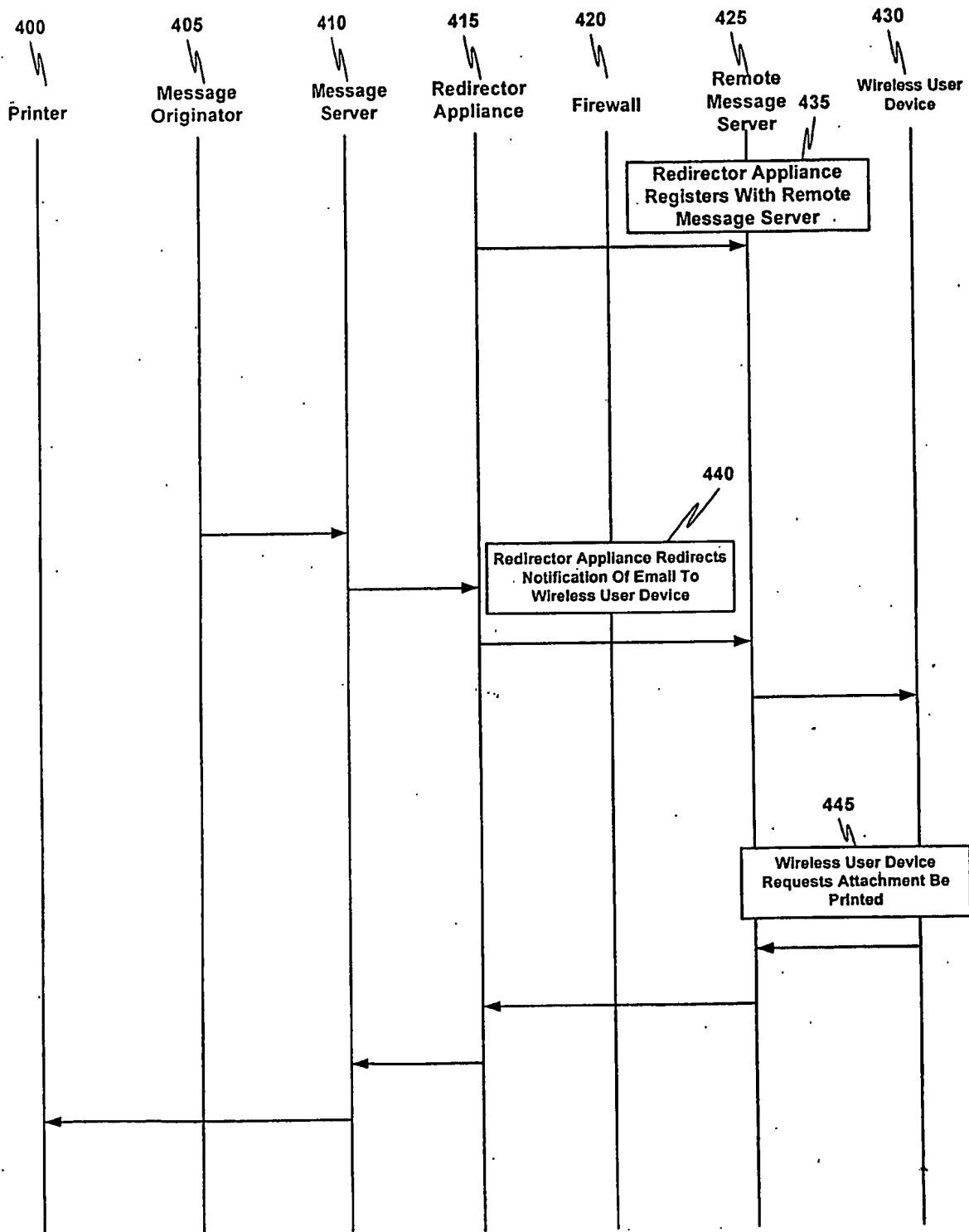


FIG. 4

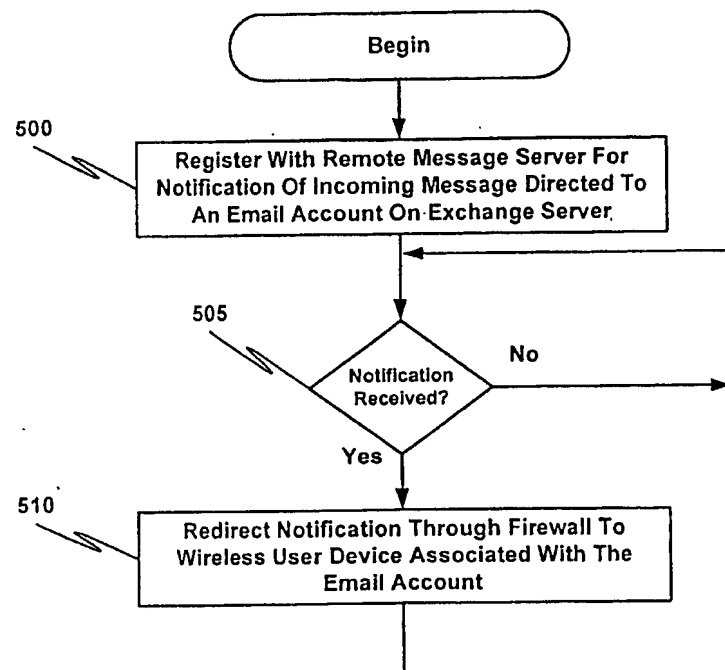


FIG. 5

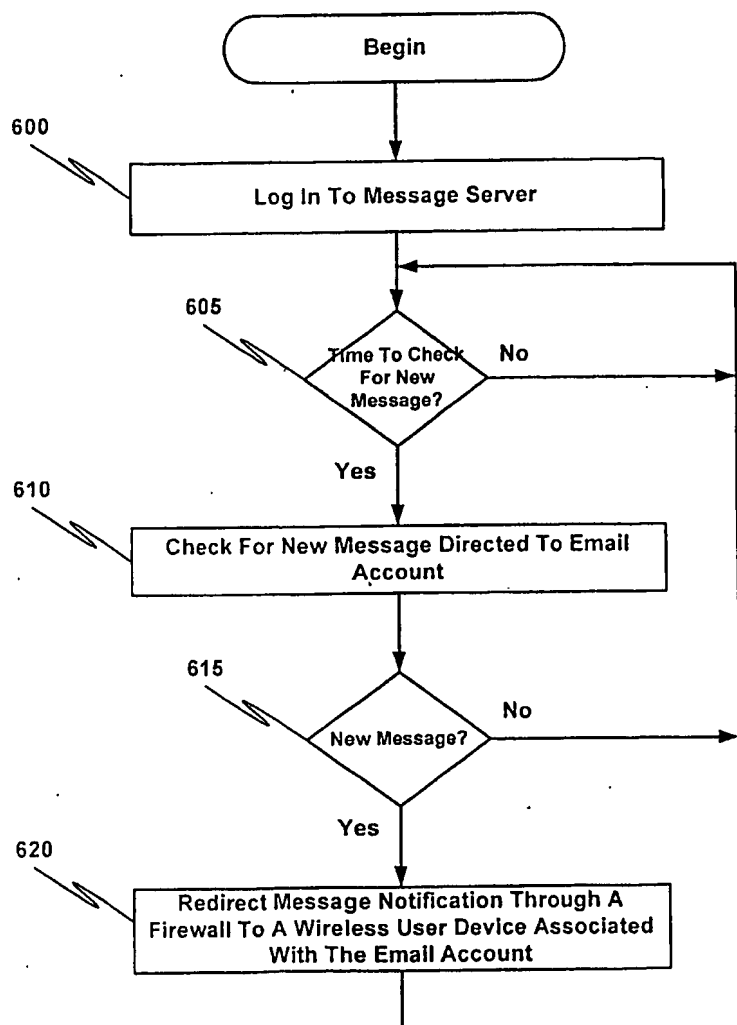


FIG. 6

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 03/01611

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04L12/58

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02 25890 A (RES IN MOTION LTD ;BAJAR DAVID (CA); HIND HUGH R (CA); LEWIS ALLAN) 28 March 2002 (2002-03-28) page 14, line 25 -page 15, line 17 page 24, line 5 - line 31 page 25, line 29 -page 26, line 24 page 27, line 13 -page 32, line 11 page 35, line 29 -page 36, line 24 ---	1-78
X	EP 1 014 629 A (PHONE COM INC) 28 June 2000 (2000-06-28) paragraphs '0002!-'0005! paragraphs '0019!-'0029! paragraphs '0079!-'0087! --- -/-	1-78

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

17 February 2004

Date of mailing of the international search report

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3018

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Frey, R

INTERNATIONAL SEARCH REPORT

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PCT/CA 03/01611

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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